



Fig. 2.

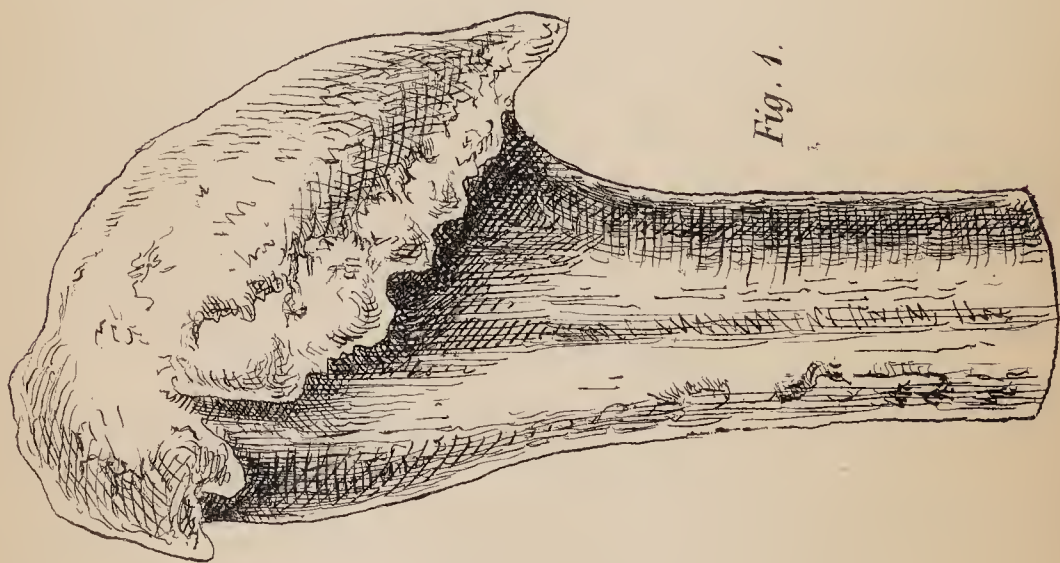


Fig. 1.

NOTES
ON THE
MORBID ANATOMY
OF
CHRONIC RHEUMATIC ARTHRITIS
OF THE
SHOULDER AND OTHER JOINTS.

REMARKS
ON
INTERSTITIAL ABSORPTION
OF THE
NECK OF THE FEMUR
FROM
BRUISE OF THE HIP,

AND SIMILARITY OF THE MORBID APPEARANCES TO THOSE SEEN
IN THE RHEUMATIC DISEASE OF THIS JOINT.

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(Reprinted from the Medical Gazette, 1848.)

EXETER:
W. ROBERTS, 197, HIGH-STREET.

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NOTES.

THE object of the following remarks is an endeavour to describe a series of changes to which the parts forming the shoulder-joint are occasionally subject, and to establish an analogy, not only general, but in detail, between them and those to which the hip-joint is also liable. The complaint in the latter articulation received from Mr. Adams, of Dublin, the name of “*morbus coxæ senilis* ;” but as he had met with many instances of it occurring as early as the age of thirty or forty, he is disposed to substitute for this title that of “*chronic rheumatic arthritis*.” My own observations have been limited to the examination of persons beyond the age of fifty, but I have no doubt that this affection may attack the shoulder at an earlier period. Its occasional presence in the scapulo-humeral joint has been incidentally alluded to by the above-mentioned author, by Mr. Smith,* Mr. Curling,† and

* Dublin Journal, vol. vi. † Med-chir-trans, vol. xx.

Mr. B. Bell,* but, as far as I am aware, a complete account of the structural alterations to be found in connection with it has not yet been furnished: an admirable engraving, however, of some of them, taken from the disease in an aggravated form, may be seen in Sandifort's *Museum Anatomicum*, tab. xcix.

When, after death, we find various morbid changes in an articulation,—such as entire absence of encrusting cartilage,—substitution in places of porcelaneous material,—undue thinness of the cortex of the bones,—expansion of opposed surfaces, with irregular ossific growths around—absorption of particular fibrous tissues, &c.; and, on examination of another joint, analogous to the former in function and anatomical arrangements, discover that precisely the same abnormal appearances are present, it is a fair inference that the like causes were in operation which led to these peculiar conditions, and that a corresponding train of symptoms had, in each instance, existed. With these considerations, I am induced to regard certain alterations in the shoulder-joint, which I have several times met with after death, as having proceeded during life in connection with such an order of symptoms as characterises the same affection of the hip. This opinion, however, I have not been able to verify by post-mortem examination of any case which has fallen under my observation during the patient's life. I propose, in the

* *Diseases of the Bones*. 1828.

first place, to describe the appearances observed in two articulations, taken from the same subject (a female aged 80), where morbid action must have, for some time, existed, to establish eventually the following conditions:—

Scapula. (Pl. i. fig. 2.)—The encrusting cartilage of the glenoid cavity is entirely wanting, and the exposed surface is, in the major part of its extent, rough. A widening in all directions has occurred to the part, so that the height measures one and six-eighths of an inch, and the breadth one inch and a half; whilst the depth is thrice as great as it should normally be. The glenoid ligament has wholly disappeared, leaving a margin scabrous in some places, sharp and irregular in others: the upper is as wide as the lower part, and from more than the superior half of the circumference springs a broad, spongy, osseous growth, which is turned directly backwards, so as to rest upon, and be in a great measure affixed to, the cervix of the bone. That portion of the long tendon of the biceps which is naturally in connection with the joint has been completely absorbed, and the head of the humerus, in consequence, must for some time, have played against the under surface of the acromion: such is shown to be the fact, for in that situation is an articulating surface larger than a sixpence, extending forwards to the anterior margin of this process, having a slightly raised edge, concave form, and coated to some extent with porcelaneous material. The adjacent portion of the

deltoid ligament is ossified, and enters into the composition of the surface described, which, in consequence of the upward extension of the glenoid cavity forms with the latter a continuous excavation for the head of the humerus. The anterior extremity of the coracoid process is thin and sharp, being, as it were, bevelled off by the presence on its inferior and outer aspect of an articulating facet, which is nearly as large as the little finger-nail, and similar to the one last described both in surface and office. Between the posterior edge of this surface and the inner projecting margin of the glenoid cavity there is an interval of only two lines.

Humerus. (Pl. i. fig. i.)—The breadth of the articular portion is much increased in all directions, with a considerable diminution of its natural amount of convexity. The cartilage is wanting: the surface beneath is here and there slightly rough. The cortex is delicately thin, and with a little pressure might, in some places be cut with a knife. The mesh-work of the cancellated texture is, as it were, opened out, and filled with medulla, preternaturally red. The circumference of the anatomical neck is overlaid by a cincture of osseous growth, analogous in form to that encircling the glenoid cavity of the scapula, and like it, too, spongy in texture. The chief portion of this substance is around the lower third of the cervix, giving in consequence to the sawn surface of a vertical section the

appearance, in this situation, of a pointed and abruptly curved hook. A sketch of the exact counterpart of this specimen is given by Mr. Curling with his admirable paper on Atrophy of Bone, in the Medico-Chirurgical Transactions.

Fibrous and other tissues.—The capsular ligament is generally thickened, and in two situations a portion of it has been absorbed,—viz. at the upper and at the inner part, where are found the articular surfaces for the humerus on the acromion and coracoid processes. The capsule is adherent to the circumference of these surfaces. The synovial membrane is very vascular at its upper and lower attachments, and there is a want of its proper secretion. The greater part of the tendon of the supra-spinatus muscle is wasted, as a consequence of the new position of the head of the humerus. The glenoid ligament and bicipital tendon have been referred to as absent. The deltoid muscle is atrophied.

As, in the case of the femur, when its neck is attacked by interstitial absorption, the trochanter major is above—and often much above—the level of the head of the bone, so with this humerus the summit of the larger tuberosity is on a plane superior to the upper edge of the articular surface; indeed, the whole appearance is such as would be produced by pressure applied over this latter part (supposing it pliable) in a downward direction, whereby a change in the axis and

convexity of the surface is produced, with a projection below to conceal the anatomical, and overhang the surgical neck.

Not having seen the patient during life from whom these parts were taken, I am unable to say how far the changes occurring in them were in connection with rheumatic symptoms, but may mention that it is rendered highly probable that these latter had for some time been present, for the periosteal investment of the extremities of most of the long bones was thickened, unduly vascular, and studded with spiculated osseous projections, more or less encroaching upon adjacent joints, presenting altogether those appearances which are well known to characterise eventually long-continued intractable cases of rheumatism. I should add, in evidence corroborative of the opinion expressed, that the pericardium was found to be intimately adherent to the heart in its entire extent; and an examination of both hip-joints disclosed great changes induced in them by chronic rheumatic arthritis.

In the above description I have purposely refrained from pointing out, step by step, the striking analogies to be observed between the diseased appearances in the shoulder and hip-joints, simply to spare the reader the tedium of repetition; but reference to specimens of the complaint in the latter articulation (and there are few museums without them), will afford satisfactory proof of the identical nature of the changes.

Order of the changes.—I am inclined to believe that the long tendon of the biceps suffers early in this disease, for in several instances I have noticed its entire absence at the same time that there were evident traces, in addition, of the commencement of the affection. The removal of the cartilage may be also regarded as a leading change; I have observed that the portion of it encrusting the lower part of the glenoid cavity, and corresponding surface on the humerus, are the first to disappear. This structure, before removal, becomes much softer in consistence than natural, and on near inspection is seen to present the appearance of loosely arranged pile of velvet. Occasionally we may see a patch presenting, in part, this peculiarity, whilst in the remainder of its extent the bone is completely denuded, with no definite boundary-line noticeable between the two, but in lieu of it, a gradual “wearing down” of this texture. The glenoid ligament is removed, as the cavity it surrounds is expanding to accommodate the flattening head of the humerus. These changes I have noticed as pursuing the same order in the hip-joint, where, also, with the gradual removal of the ligamentum teres, a simultaneous absorption of the Haversian gland is in progress.

Co-existence of the disease in other joints.—From the opportunities I have enjoyed of post-mortem examinations in these cases, I believe that it is not unusual to find other joints affected in the like manner at

the same time. In one instance I found both hip and shoulder-joints of each side were similiarly diseased. In another case, the left shoulder and right knee had suffered. In a third example, there was incipient mischief in the right shoulder and left knee; and in a fourth case, the carpo-metacarpal articulation of both thumbs partook with the left shoulder-joint of the same complaint. These facts are introduced in corroboration of a remark made by Mr. Adams, in describing chronic rheumatic arthritis of the knee; "when it is affected," he says, "other joints in the same individual will also be found more or less implicated."

Loose cartilages.—I may here mention an analogy observed in the three joints referred to with respect to the presence of portions of bone in their immediate neighbourhood, which have become in part or wholly detached when the articulations are in the morbid condition described. A short time since I removed from the body of a well-formed and muscular old man, the parts composing the right hip-joint, and found a piece of nodulated spongy bone, one inch and a quarter in length, springing from the upper and outer margin of the acetabulum to be almost completely separated; its outer surface was irregular, like many adjoining exostoses, whilst the inner, against which the head of the femur moved, was, like the latter, white and polished. In two shoulder-joints, similarly diseased, were seen small, flat, circular pieces of bone closely connected to

the capsular ligament, beneath the acromion process and by the side of the articulating surface, formed on the lower aspect of this part for the head of the humerus. And, lastly, in a knee-joint which presented expanded condyles, with vertical grooves and ridges on the outer one, interlocking with a similiar arrangement on the flattened and distorted patella, with removal of cartilage, &c. an oblong piece of semi-osseous substance had been detached from the elevated circumference of the trochlea, and was lying free within the joint. This mode, amongst others of the source of so-called "loose cartilages," is one, I believe generally admitted.

Chemical changes in the bones of the shoulder after the age of fifty.—In a paper, by Mr. B. Cooper, contained in the Guy's Hospital Reports for the year 1847, on fracture of the neck of the thigh-bone, the interesting fact is communicated, that a considerable diminution of the normal amount of earthy matter takes place in the head and neck of the femur of persons beyond the age of fifty, and this point is brought to bear in a striking manner upon the subject of non-union of the cervix femoris after it has suffered intra-capsular fracture.

Reasoning from analogy, I was induced to believe that the circumstance referred to would find a parallel in the upper portion of the humerus, and the articular part of the scapula, after the above-mentioned age, and

a subsequent analytical inquiry has justified the correctness of the idea. The results obtained, indeed, bear a very close alliance to those elicited by Mr. Cooper from his examinations of the femur; but, their being as yet derived from a few specimens only, I have deferred the publication of them in detail until more numerous analyses—which are in progress—may warrant the assertion, that this condition of the humerus is to be regarded as much a constant one, after a certain period of life, as it is to be so in the case of the femur. In order to render the subject more immediately under consideration complete, an analysis of the bones of the shoulder and hip-joints of elderly persons affected by chronic rheumatic arthritis, has been undertaken, and I shall be happy, on its termination, to communicate the results.

CASE 1.—S. M., æt. 74, confined to his bed from the beginning of October, 1846, to the middle of June in the following year, from indisposition, and was invariably accustomed to lie on the left side, so that the shoulder was continually subject to pressure, which became at times so annoying, from the “wearying” pain induced, as to oblige him then for a short while to shift to the opposite side. The pain was felt in and between the acromion and coracoid processes of the scapula, but not in the joint itself. He experienced a gradually increasing stiffness of the articulation, and by this time it has disabled him to abduct

the arm further than to a position midway between that of a vertical and horizontal one. In placing the arm across the chest, and elevating it, the extremities of the fingers can barely be made to reach the angle of the jaw of the opposite side; and if this movement be attempted to be carried further, much pain is caused on the inner side of the joint, and along the inner side of the arm as far as the elbow. Rotation augments the pain, as likewise does directing the elbow backwards. During the performance of these movements, no particular sound, as articular crepitus, is heard, nor is any peculiar sensation communicated to the hand applied over the deltoid. He complains of constant, dull, heavy, aching pain in the joint, and extending down the inner side of the arm. This is not augmented by pressing the articular surfaces of the humerus and scapula together, nor by making upward pressure at the elbow. The pain becomes worse at night, but is not aggravated by damp weather. He has never been afflicted, he says, with rheumatism, and all the other joints appear to be perfect.

On examination, the left deltoid muscle is seen to be much wasted, and the head of the humerus is found to be immediately beneath the acromion process, whilst careful admeasurement shows that the distance between the latter and the external condyle of the humerus is, to an appreciable extent, less than that of the opposite side. This patient has been suffering from

asthma since the year 1809, and has been prevented by it from lying on his right side when in bed.

CASE II.—Alexandre Simon, æt. 82, an inmate of St. Martin's Workhouse. About four years ago he had a severe attack of rheumatism in the right shoulder-joint; this lasted for several months, at the expiration of which time the disease quitted the part, and immediately settled itself in the hip of the same side. Since this latter period the right leg has gradually become shorter than its fellow, and its length is now less than natural by the extent of more than an inch. He has for a long while been obliged to move about with crutches. Three months since he suffered from a second attack of rheumatism, which continued for a few weeks, in the right shoulder, the movements of which were suspended, in consequence, for three weeks, as the slightest motion materially aggravated the attendant pain. At present there is great stiffness of the part, and a constant "wearisome" pain, which becomes worse at night, but is not increased by damp weather. The different movements of the joint may be executed, but with unnatural limitation of them, and any effort made to extend this boundary induces pain in the joint and at the insertion of the deltoid muscle. These parts suffer also in abduction and rotation of the arm especially. On applying a hand over the articulation, and directing the humerus in various ways, articular crepitus may be felt and heard,

and of this the patient is himself often conscious. No pain is complained of on pressing the humerus against the glenoid cavity, or making upward pressure at the elbow-joint. The amount of flattening which the deltoid has suffered cannot be well judged of, for the opposite shoulder had several years ago been the subject of a dislocation, and, its movements having since then been restricted, the muscle is proportionably wasted. The distance between the acromion process and external condyle of the humerus on the right, is less by nearly half an inch than on the left side.

(From the Medical Gazette of 1848.)

IN a paper published in the MEDICAL GAZETTE for March of the present year, I described the morbid appearances to be met with in cases of the above disease, when affecting the shoulder joint. Since that time I have had additional opportunities of noticing the complaint in this and other articulations, and finding that the particular features it presents after death have been mistaken occasionally for the effects of accident, or regarded simply as changes natural to old age, I am induced to communicate further observations, with a view to the prevention of future error, and of calling

attention to an affection which is not so universally recognised, as, from the frequency of its occurrence, and the peculiar character of its ravages, I believe it might be.

Morbid appearances mistaken for the effects of accident.—With regard to the shoulder, Mr. Adams, in writing to me on this point, remarks, “there is no joint has been the subject of more mistakes relative to this disease than the shoulder. Almost all the cases published have been supposed to be those of partial dislocation—the history of the case being, in ninety-nine out of a hundred, unknown.”

In the MEDICAL GAZETTE, Vol. xiv., a paper has been inserted, by Mr. Gregory Smith, entitled “Pathological appearances in seven cases of injury of the Shoulder-joint.” The specimens were met with in the dissecting-room, and their history could not be ascertained. *Capsular tendons.*—In the first preparation, the tendons of the spinati, subscapularis, and lesser teres muscles, are described as having been completely detached or torn away from their connection to the tubercles. In the second case, the tendon of the subscapularis was partially torn from the lesser tubercle, but the insertion of the spinati and teres minor muscles remained perfect. The third example was similar to the first; and the fourth displayed two of these muscles torn from the tubercle; the inner surface of the capsule presented a very rough fibrous appearance,

occasioned by the portions of the lacerated tendons. Cases six and seven are, in respect to these tendons, analogous to the preceding ones.

The appearances described I have not unfrequently met with more or less strongly marked in cases of chronic rheumatic arthritis, and they are to be seen in connection with others in the articular surface of the humerus and scapula; the tendon of the biceps; surrounding bony growths; ivory-like deposit, &c., which characterise this affection, and all of which are carefully described by Mr. Smith, as having been found in his specimens. In tracing the course of this disease, and noticing the various morbid changes it establishes in its progress, it is easy to comprehend, how, from an early division (by absorption) of the articular portion of the bicipital tendon, and consequent displacement of the head of the humerus, with the establishment of new surfaces for the accommodation of the latter, the tendons of the capsular muscles at their insertions should suffer atrophy from pressure, and present irregular, fringed, and apparently lacerated ends attached to and intermingling with those nodulated osseous growths, which spring from the tubercles of the humerus, and elsewhere, in the vicinity of the joint in this affection.

Tendon of the biceps.—In five cases this tendon is described as being torn through, the lower part being attached to the margin of the bicipital groove, whilst

the superior portion had either disappeared, or was affixed to the upper part of the glenoid surface. In Cases VI. and VII. the tendon was not separated from its origin, but displaced from the groove, and lay loose in the inner part of the cavity of the joint; it is expanded, and bears evidence of having been subjected to pressure and friction. The bicipital groove is nearly obliterated, and portions of ossific matter have been deposited.

The conditions of the tendon of the biceps here mentioned are those most commonly to be observed in chronic rheumatic arthritis; but there are several others which would seem to be states of the part in an earlier stage of the disease. These latter are, so to speak, in keeping also with the lesser extent to which morbid action has implicated the encrusting cartilages and surrounding tissues. Displacement I have less frequently seen than the above noticed peculiarities. The author of the paper ascribes the appearances to the effects of dislocation of the humerus, either into the axilla, on the dorsum scapula, or under the pectoral muscle.

Being desirous of ascertaining from Mr. Smith whether from subsequent experience he had found reason to alter his opinion regarding the origin of these morbid phenomena, I wrote to that gentleman on the subject, and have to acknowledge his prompt attention to my letter, and the frankness of his reply. He writes,

“I was in the first instance disposed to view the appearances as purely the result of injury; but the frequency of their occurrence, and the similarity, to a greater or less extent, of the apparent mischief, induced me, afterwards, to come to a different conclusion, and to view them rather as the *destructive results of long-continued chronic inflammation of fibrous tissues*. I am speaking entirely from recollection; but, as far as I can recall to memory, we became so familiar with the appearances, that we could often detect the morbid condition of the joint before a close examination, by the alteration in the general form of the biceps muscle,—the outer head being very much smaller and shorter than usual. The subdeltoid bursa generally communicated with the shoulder-joint, &c. In two of the examples there was fracture of the acromion process, about half an inch from the articulation, which had formed the usual appearances of an artificial joint. In these instances all the structures appeared under the deltoid muscle to participate in the boundaries of the joint. It appeared to me as if some strong force had been acting to pull the humerus upwards, as by strong contraction of the deltoid muscle, continued for a length of time.”

Mr. Soden, in making the following remark,* has adduced the cases of Mr. Smith in support of his view—“that *rupture* of the tendon of the biceps would

* Medico-Chirurgical Transactions, 1841.

appear to be no uncommon accident; for its occurrence, both separately and in combination with *dislocation* of the bone, has been several times noticed."

Dr. Knox* has published an account of "the altered condition of that portion of the tendon of the biceps flexor cubiti, which passes through the shoulder-joint." The specimens were obtained from the dissecting-room, and no history of the cases could be procured. The description given of these preparations shows distinctly that the appearances presented were the effects of the *disease* under consideration, whilst the concluding observation points to *violence* as their origin:—"So far as my information extends, injuries done to this tendon in the part to which these remarks allude, are exceedingly rare, or, perhaps I should say, rarely recorded. Systematic writers do not even allude to any pathological condition of this tendon, and this is a principal reason why I now bring this subject before the profession, and solicit to it the attention of practical surgeons and pathologists."

Bones of the shoulder in old age.—In my last communication, I mentioned that analogy would lead us to expect certain chemical changes to have taken place in the bones of the shoulder-joint in advanced life, similar to those which have been noticed by Mr. Bransby Cooper in the head and neck of the thigh-bone after the age of fifty. And to my friend

* MEDICAL GAZETTE, vol. 1.

Mr. Harper I am indebted for the subjoined accurate analyses, which, when formerly alluded to, were in progress only. As a matter more immediately connected with, and possessed of much interest in the present inquiry, the results of an examination of the shoulder-bones, already described, have been added; likewise of the bones of the hip from the same subject, and which, like the former, are extensively affected by chronic rheumatic arthritis.

	Amount of earthy matter.			Amount of animal matter.		
	Articular part of Scapula.	Head of Humerus.	Shaft.	Articular part of Scapula.	Head of Humerus.	Shaft.
Male, æt. 25, (died of phthisis) - - - -	45·26	36·86	59·83	54·74	63·14	40·17
Female, æt. 82 - - - - -	32·47	24·70	36·42	67·53	75·30	63·58
Male, æt. 61, (died of fever) - - - -	32·88	23·19	54·70	67·12	76·81	45·30
Female, æt. 80 - - - - -	40·50	27·19	44·59	59·50	72·81	55·41
Female, æt. 78, (died of scirrhus uteri) -	30·40	23·53	48·64	69·60	76·47	51·36
Male, æt. 78 - - - - -	32·30	26·29	49·59	67·70	73·71	50·41
Female, æt. 70 - - - - -	36·32	26·13	46·54	63·68	73·87	53·46
Female, æt. 89 - - - - -	40·00	23·40	47·22	60·00	76·60	52·7
Male, æt. 75, (a fine, muscular subject) -	41·50	39·70	59·35	58·50	60·30	40·65
Female, æt. 80, (chronic rheumatic arthritis)	23·13	29·49	61·76	76·87	70·51	38·24
Do. Do. (acetabulum)	23·46	.	.	76·54	.	.
Do. Do. (femur) - -	.	22·43	43·00	.	77·57	57·00

I have already given the history of two cases of this disease of the shoulder-joint, and believe that before quitting this department of the subject, the relation of a third may not be found out of place, or devoid of interest.

CASE III.—James Harrison, æt. 78, residing in the neighbourhood of St. Martin's Lane. The patient, a

tall, emaciated, and feeble man, who for many years has been labouring under a large scrotal hernia, combined with hydrocele on one side, and an equally large femoral rupture on the other, states that in the year 1805 he “got thoroughly wet through,” and the next morning suffered from rheumatism of the right shoulder, but in no other part. This was the first attack of the complaint he had experienced, and for it was attended by Dr. Hope, in Edinburgh. The treatment adopted, relieved him of the affection in a short space of time. From this period to the winter of 1847 the joint had been free from any uneasiness, except in damp or frosty weather, when a “sensation of gnawing” was complained of in the part, and continued to trouble him whilst the inclement weather lasted. This inconvenience, however, has not been of a nature to prevent him following his usual work, that of a gentleman’s servant. In unfavourable weather the pain was always aggravated at night, or, as he says, “when warm in bed.” In the winter of 1826, whilst employed in dislodging snow from a house-top, he caught a violent cold, through getting his feet wet, and from that time the left hip has been affected with rheumatic pains, which, like those of the shoulder, were found to be invariably increased in frosty or damp weather, and when in bed. The pain was always especially felt “the first thing in the morning,” whilst a sensation of cracking and grating in the joint was frequently com-

plained of ; at the same time, the sound emitted, particularly when rising from a sitting posture, has been audible to, and remarked upon by, the by-standers. Nine or ten years ago he became, for this complaint, a patient in the Middlesex Hospital, under the care of Mr. Arnott. Various applications were employed without relief; and at the expiration of a month, the nature of the disease and its intractable character having been explained to him, he quitted the hospital. At this time he walked lame, and was informed, after admeasurement of the limbs had been made, that the left leg was shorter than the right one. At present no great difference is to be noticed, inasmuch as, the opposite hip has become affected.

To return to the shoulder. No distinct attack of rheumatism occurred to it since the one above mentioned; but it has continued the seat of the same symptoms as those previously described during the last twelve months. On applying a hand over the joint, then rotating and circumducting the humerus, a very well-marked "articular crepitus" is heard, and the peculiar sensation characteristic of it, also, is communicated to the touch. The crepitus is most readily felt when, in circumduction, the arm passes forwards from the side of the chest, the movement producing, at the same time, an indescribable uneasiness in the articulation. Pressure on the deltoid muscle, so as closely to approximate the joint surfaces of the humerus and

scapula, gives no pain, nor is any inconvenience experienced when the head of the humerus is directed against the under part of the acromion process. The arm can with difficulty be elevated, directed forwards or backwards. The deltoid of either side, in common with the muscles generally, is much wasted; little, if any, difference is to be noticed, however, between the two sides. Measurement does not show the right humerus to be nearer the acromion process than it is on the left side.

An incessant dull pain, aggravated by motion, is complained of in the joint, and extending thence down the front of and along the inner side of the arm to the elbow.

The acromio-clavicular articulation presents a partial dislocation of the clavicle, which is elevated, and appears to be fixed near to the upper edge of the articular surface of the acromion process. This joint on the opposite side is in all respects normal.

Acromio-clavicular joint.—This part is not always affected when the shoulder is attacked, but I find it is not unfrequently so. It soon becomes the seat of a partial dislocation of the clavicle upwards, and an unnatural degree of mobility is present, or the bone may become fixed in its new situation by soft ankylosis, as in the instance referred to. I have lately had the opportunity of dissecting a joint which was in the first-mentioned condition, and found the ligaments to be

highly developed; the synovia thick and abundant; the bones large and strong; the articular surfaces expanded; partly divested of cartilage, and marked with other characteristics of the disease. An inter-articular body was seen occupying, as it usually does when present, the superior half, only, of the articulation. It was wedge-shaped, and firmly attached by the broad end to the thickened ligament above; the lower having been, as it were, worn down, and become fringed and free. The shoulder-joint was healthy.

The disease has been noticed in this situation by Mr. Labatt in a case where the shoulder was similarly affected. "The acromio-clavicular articulation," he observes, "was remarkably relaxed, admitting of extensive rotatory motion. The superior ligaments were much thickened and hypertrophied, and enclosed three or four minute cartilaginous nuclei, one of which pressed in on the joint. Synovial membrane nearly absorbed; investing cartilage thin and softened."

The hand.—This complaint attacks not unfrequently several joints of the hand and wrist together, and we rarely find it affecting one of them singly. The young may be the subjects of the malady, and experience the local changes it induces, but the most common victims are the aged, in whom its peculiar ravages are marked during life by that order of symptoms which characterises the disease elsewhere seated; whilst enlargement and other distortion, impeding movement,

—articular crepitus, experienced sometimes on motion, —soft ankylosis or spontaneous and partial displacement,—may constitute additional phenomena of the affection. These latter morbid conditions, however, are not to be regarded as peculiar to the hand; for the disease often stamps with like distinct impress other diarthroses. The appearances disclosed after death tally well with the abnormal states observed during life, and will be shortly described.

In the year 1805, Dr. Haygarth published a small work on Acute Rheumatism, to which was appended “a clinical history of the nodosity of the joints.” The latter affection is clearly shewn, by its description, to be the one at present under consideration. “These diseased joints,” it is remarked, “generally suffer, especially at night, but in a less degree than might be expected from such a considerable morbid change: they often feel sore to the touch. In one case the patient was attacked with severe spasmodic pains. As the disease increases, the joint becomes distorted, and, perhaps, in bad inveterate cases, even dislocated. In a few patients, a cracking noise was perceived in the joint when in motion, particularly in the neck. The skin seldom or never inflames.” The author has more frequently seen the complaint in the hand than elsewhere. Out of thirty-four cases, one only was in a male; all the patients (two excepted) were above forty-one years of age, and the most common date of the

The Spine.—I believe the joints of the vertebral column to be not unfrequently the seat of chronic rheumatism, and that certain appearances of the bones, which are so generally considered as indications of advanced years, to be, in point of fact, gradually produced by this disease in its progress. In examining the vertebræ in the recent state, we occasionally find that the depth of the bodies is diminished in front or on the side, whilst from around the upper and lower margin osseous matter has been thrown out in greater or less abundance, and is thick at its origin, but irregular, bevelled, and thin where it is embedded in the adjacent ligamentous tissue. This growth is sometimes compact, or it may be spongy, in texture. I have seen the anterior common ligament replaced by a broad bony lamina, lying in front of, and intimately united with, several vertebræ. Exuberant bone is not to be seen at the part corresponding to the spinal canal, or, at all events, not so placed as to encroach upon the latter. The inter-vertebral substance, when the bones are in the above-mentioned state, will, in general, be found to present a more dense, compressed, and brittle condition, than natural, whilst in some cases the disc has disappeared, and the bones which it had separated have become firmly ankylosed together. The spine may be bent either to the right or left, but, for the most part, the curve is forwards. It is on the joint surfaces of the articular processes that porcella-



Fig. 1

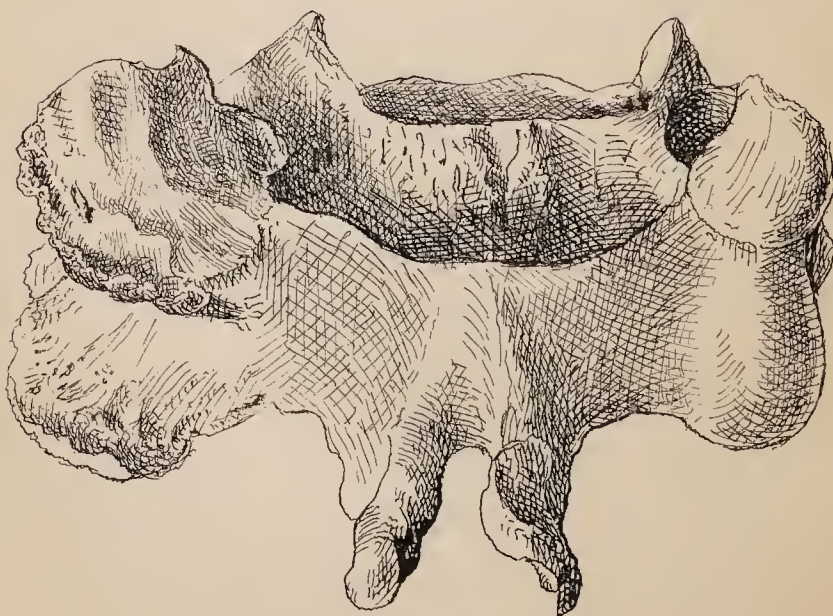


Fig. 2.

nous matter is most frequently to be seen ; and when I have met with it, it has been in the cervical and lumbar regions—situations in which mobility is enjoyed to a greater degree than in the intermediate part. In a vertebra from the loins, and one from the neck, at present before me, (Pl. iii.,) the upper and lower articular surfaces on the left side only are affected, and they are spread out to more than thrice their natural extent ; bony matter is plentiful at their circumference, and a continuous stratum of porcellaneous matter, presenting a fine polish, encrusts all that part where motion was performed. In connection with the mention of this deposit, I might again quote the passage already cited from Dr. Haygarth's work :—" In a few patients a crackling noise was perceived in the joint when in motion, *particularly in the neck.*" I possess a specimen of a lumbar vertebra, the inferior articular surface of which is wholly coated with ivory-like deposit, presenting ridges and furrows, curved and concentrically disposed in the long axis of the part.

The peculiarities which I have alluded to in reference to the bodies of the vertebræ, may—some of them, at least—be noticed in a preparation (No. 1374) in the King's College Museum. The description given of it is—"Softening and *caries* affecting the bodies of the cervical vertebræ."

An instance of the occurrence of this affection in

the spine is mentioned by Dr. Todd* :—"Among the inmates of the Wandsworth Union is a poor girl, aged twenty-five, who is the most extraordinary martyr to this disease in all her joints, even in those of the *cervical vertebræ*."

Ivory-like deposit.—A peculiar feature in this complaint is the deposit so commonly seen on the joint-surfaces, and well known to all by the name of porcelaneous, enamel, or ivory-like. It replaces cartilage, forms for it an efficient substitute, and, though lacking the pliancy and elasticity of the original, presents both polish and density, to ensure a certain facility of motion, and guard against injury from friction. It is found in situations where no cartilage had previously existed, and as new articular surfaces are being formed, to accommodate a bone in its altered position, a provision is required to maintain freedom of movement and the want supplied by the presence of this material. It is always in abundance where pressure is greatest; and by presenting an even or furrowed aspect, facilitates enarthrodial or secures ginglymoid motion. It will as readily clothe bone of new formation, as constitute a crust upon the original tissue. "L'état éburné des cartilages," says Lobstein, "est manifestement un effet de l'arthritisme; une fois produit il déter-

* Practical Remarks on Gout, Rheumatic Fever, and Chronic Rheumatism of the Joints. P. 180.

mine de la rigidité et des douleurs dans les articulations affectées et des craquements dans leur mouvements. Le poli dont je parle est sans doute l'effet du frottement; mais la substance éburnée résulte évidemment du dépôt de la matière osseuse qui a envahi et détruit les cartilages diarthrodiaux; ce qui la prouve c'est son exubérance autour des surfaces articulaires, auxquelles elle donne un rebord saillant."

I have much pleasure in here acknowledging the kindness of Mr. Quekett, of the College of Surgeons, who has favoured me with the following interesting and original view respecting the formation of this material:—"On removing some thin slices with a saw, and making them sufficiently thin for the microscope by grinding away the cut surface, I found that the bone was more than usually dense, and that there was an almost total absence of Haversian canals, which made the bone more dense; this led me to speculate on the cause of this porcellanous deposit. Recollecting that the French-polisher (when he wishes to give a fine polish to rosewood, mahogany, or any other woods which have an open grain) first fills up the pores in the wood with some wax, or resinous material, and then polishes, whereby a fine lustre is obtained, it at once struck me that no bone could present this porcellanous appearance without its canals were first filled up; and I then began to consider how this took place. In every bone which I examined, having this

deposit upon its surface, I invariably found that in the immediate neighbourhood of the deposit there was an additional quantity of bony matter thrown out; and I considered that there would have been a similar growth upon all the other parts, had there been no friction of opposed surfaces in these places—the exuberant growth being kept down by the friction. The only other places in which new bone could be deposited were the canals, which were by this means filled up, and the bone rendered more dense in consequence, which dense bone being subjected to constant friction, became polished, and hence the cause of the so-called porcellanous deposit.”

Displacement of bone.—A peculiarity to be noticed, often, in this affection is displacement of bone, predisposed to, in some joints, I believe, by relaxation of the ligaments, consequent upon the presence in the articulation of an undue accumulation of synovia, which becomes thicker, and of a deeper yellow tint than natural; whilst, in others, the removal of certain fibrous tissues, as the tendon of the biceps and the action of surrounding muscles, explain the cause of this faulty position.

The extent to which displacement occurs is greatest in enarthrodial joints; but it should be stated that the term *displacement* must bear a limited signification, only, inasmuch as the joint-surface of a bone does not always leave its recipient cavity, which becomes en-

larged, whilst the part corresponding to it expands, as seen in the hip and shoulder; but, at the same time, in the latter, from the loss of the long bicipital tendon, in part, the humerus shifts upwards, to articulate with the under surface of the acromion process, so that the distance between the latter part and the external condyle is slightly diminished; and the elbow, when placed by the side of the chest, does not extend quite so low down as its fellow. Again, in the hip this relative displacement is dependent mainly upon the neck of the femur assuming the horizontal direction, and being removed partially or completely by interstitial absorption, when the limb being proportionably drawn up, becomes shorter than its fellow by an extent varying from an inch to two inches or more. The expanded head of the bone is often so locked into its widened cavity by circumferential bony growth, that, dislocation, in the ordinary acceptation of the term, could only be effected by great violence—violence, indeed, which would more probably produce fracture than cause luxation. The displacement bears reference to the heel, malleolus, patella, and trochanter major of the opposite limb; whilst the joint itself—so far as regards the correspondence of articular surfaces, is as intact as the opposite one. Cruveilhier terms this faulty position “*déplacement consécutif.*”

A partial displacement in the usual sense of the word, may, however, occur; and an instance has been

cited in the case of Harrison, where, on one side, was an incomplete luxation of the acromial end of the clavicle.

Loose cartilages.—These bodies have been noticed in various articulations, but the situation in which they are, perhaps, most commonly to be found is the knee-joint. An explanation of their origin is variously given by different authors; but when present, in connection with chronic rheumatic arthritis, they seem almost invariably to have been formed as bony or cartilaginous matter, deposited in the fibrous textures around or within the joint, and becoming detached, accommodate themselves to the altered form and restricted movements of the articulation. We not unfrequently see, in this affection, these bodies placed in the substance of the ligaments, or more or less projecting into the interior of the joint; and sometimes a single one is to be seen enclosed in a pouch-like offset of the synovial membrane. An example of this arrangement I met with in the first carpo-metacarpal articulation which had been attacked by the complaint under consideration. The little body was oval in form, irregular on the surface, less than a quarter of an inch in length, of semi-osseous consistence, and a grain in weight.

Mr. H. Labatt, in describing the appearances found in this disease affecting the shoulder-joint, says—"The capsular ligament, being divided internally and inferi-

only, considerable ossific deposit presents itself in this direction, at the junction of the head and anatomical neck of the humerus; and projecting into the joint, but imbedded in and evidently connected with the tendinous structure of the subscapularis muscle at its insertion, is an osseous body, rough on its surface."

REMARKS ON
INTERSTITIAL ABSORPTION OF THE NECK
OF THE FEMUR FROM BRUISE OF THE HIP.

(From the Medical Gazette of August 11th, 1848.)

The injury in early age.—We possess no data on which to found an opinion as to the probability, in any given case, of the limb becoming shortened from interstitial absorption of the cervix femoris, after injury to the hip of a comparatively young subject. Either sex may suffer the change; no peculiarity of constitution is to be detected, as constantly present, in these cases; blows on other bones or joints are not followed by such a phenomenon; early or late in life atrophy may succeed the violence; the shortening may advance with greater or less speed; and the gradual insidious, and, in some instances, almost complete removal of the neck of the femur, is accomplished without any appreciable signs of inflammation; without

any general affection of the system, and in the absence, it may be, of much local inconvenience. The commencement of shortening may date from the time of the accident, or occur some weeks or months subsequently. Mr. B. Bell attended a lady in 1825, who could walk with assistance a few days after the accident. In this case the limb was shortened to the extent of an inch in the course of ten months after the injury.

It is important that we should always bear in mind that interstitial absorption may supervene upon bruise of the hip, for blame by patient and friends is readily cast upon the medical man who has, originally, pronounced the violence inflicted to be a matter of no further moment than to require, but for a short time, rest and local applications to relieve its consequences; and who has been unaware, or neglected to state, that such an apparently trivial injury entails, in some instances, incurable lameness.

Beyond this, a great error in diagnosis is believed to have been committed; for a fracture of, or close to, the neck of the thigh-bone, or a dislocation, is presumed to have been overlooked, and those measures necessary for maintaining coaptation or effecting reduction, consequently, neglected, and which otherwise might, by their employment, have secured the former length and utility of the limb. That such an error should be made, however, is by no means probable, for the accident is unaccompanied by a single symp-

tom characteristic of the fracture or luxation : the result of the case, nevertheless, might expose the character of the unguarded practitioner in attendance, to an imputation of ignorance, raised by uninformed or interested persons ; whilst the evidence of apparent mistake presented by the sequelæ of the case, gives a strong, though false, colouring to the justness of the charge.

An acquaintance with cases of this description is valuable also, I believe, as the disease during its progress might, otherwise, be confounded with that more serious and often intractable affection, morbus coxarius,—this latter complaint leading, not unfrequently, to total disorganization of the joint and ankylosis, or terminating in death ; the former being an affection unconnected, except incidentally, with the strumous diathesis, and ending in loss of the cervix femoris without producing any constitutional disturbance, without the establishment of ulcerative absorption and the formation of matter,—involving, to a variable extent, the head of the bone and acetabulum, but not affecting, eventually, to any great degree, the range of motion.

I have been unable to find the *details* of any cases in which the neck of the thigh-bone has suffered this peculiar affection in young subjects, as a consequence of injury inflicted over the part, with the exception of those so well described by Mr. Gulliver.* The com-

* Edin. Med. and Surg. Journal, vol. xlvi.

plaint at this period of life is acknowledged to occur occasionally, from violence; but an idea that it is not so generally known as it should be, has induced me to communicate these particulars, and with a view, also, of eliciting further information from others on this very interesting subject.

Occasional allusion is made by authors to the effect of this accident in comparatively young persons, as in the following extract from Mr. B. Bell's work :*—"I have met with cases in which interstitial absorption had affected the neck of the thigh-bone of one side in persons of thirteen, thirty, and forty years of age. In cases which occur in middle age it does not, in general, appear to be an idiopathic affection, but is the direct result of cold, or a fall, blow, or injury of the trochanter major." The subjects of the complaint who fell under the notice of Mr. Gulliver were all males, of the respective ages of fifteen, nineteen, thirty, thirty-two, and forty-five years.

The following case, through the kindness of Dr. Bainbridge, I have had an opportunity of watching, for some time, and of which I have made the subjoined notes.

CASE I.—Mary Betton, æt. 19, an inmate of St. Martin's workhouse. The patient is of strumous diathesis, hysterical, menstruating with irregularity, and is subject to a confined state of the bowels.

* Op. cit.

In March, 1847, whilst carrying a can up stairs, she missed her footing and caught her ankle between two rails. She fell down three steps, striking at the same time the left trochanter major and left leg; the latter continued, in consequence, to be swollen and tender for two or three weeks. There was slight, diffused ecchymosis over the outer part of the injured hip, accompanied by some swelling; and general soreness of the part was felt for several weeks, obliging her to keep her bed. The least movement of the joint gave her great pain, which she describes to have been of a sharp, shooting character, extending down the inner side of the thigh to the knee. She has always enjoyed good health until three years ago, when she was knocked down by a cab: the ribs were broken and the abdomen bruised, but neither hip was hurt. Since this period she has had frequent attacks of erysipelas in various parts of the body, has suffered from strumous ophthalmia, eruptions on the face, and has been, as she says, "altogether out of health ever since."

For the injury to the hip described she was confined to her bed three months, during which time there was felt a constant pain in the joint, aggravated almost invariably at night, and always by moving the limb. Liniments and fomentations were frequently, and without benefit, employed. At the expiration of the time named, on quitting the bed and endeavouring to move about, she found that the left leg was shorter than its

fellow, occasioning her, consequently, to limp in walking. The amount of shortening was not then ascertained, but it has, from that period to the present, been on the increase. The pain is worst at night, and increased in damp weather; it is aggravated on motion, and slightly so, by pressing the heel upward, or the trochanter inwards.

Throbbing pain is also complained of at the inner side of the knee, but only when the hip is moved. The former joint is free from swelling, redness, or tenderness on pressure, and its movements are perfect. She is unable closely to approximate the left to the right leg, or to abduct and extend the left thigh without augmenting the pain, which does not, however, under any of these circumstances, appear to be of a severe character. Flexion at the hip is unattended by inconvenience. In progression, the left foot is thrown somewhat forward, the heel is elevated, and in standing or walking, the toes of the left foot support in part the weight of the body. The sole cannot be brought to the ground without a slight inclination of the body to the left side.

On examining the patient, placed in the horizontal position, the body and limbs are seen to be well-formed, and there is but little muscular wasting of the left side of the nates perceptible. There is no redness over, or, in the neighbourhood of the hip, and there is absence of undue heat. The left heel is found to

be, at least, an inch and a half above the level of the right one. The distance between the anterior superior spine of the ilium and the upper edge of the great trochanter is less by three-quarters of an inch than on the sound side. The trochanter is shewn to be much nearer than natural to the head of the bone, by comparative measurement, on passing a tape from the centre of the pubes to the fissure of the nates, so as to include this part of the femur.

The patient states that she has never suffered from rheumatism.*

The injury in old age.—If the neck of the thigh-bone of an elderly person be examined, a particular change is often to be noticed in its direction, and in lieu of finding it set on to the shaft at an angle of 45° , it will be seen to have assumed a position more or less inclining to a horizontal one. This alteration, however, I believe, ought not to be looked upon as of such invariable occurrence, or, as happening to such an extent in the aged as is usually supposed; and I have been at some trouble to satisfy myself on this head, by inspection of the part in numerous subjects, whose ages ranged between sixty and ninety years. “I

* Since the above account was written, the patient has, for the last few months, been under the care of Mr. Evans, of Margate, for an attack of pleuritis. I am informed by that gentleman:—“In reference to her hip, I have really very little to say; it is much as when you saw her; of the two, perhaps, the limb is a trifle shorter, and I am inclined to think, somewhat smaller.”—Aug. 24th, 1848.

would venture to suggest, that those who have the opportunity, should examine the state of this part in relation to the later periods of life, so as to enable us to distinguish between what has been considered as *con-natural with old age*, and that which may be regarded as the *effect of disease*.”* Since my attention has been drawn to this subject, I have had frequent occasion to profit by this valuable advice in post-mortem inquiry, and to be satisfied that many specimens which might be regarded as strikingly illustrative of senile atrophy, with change in position of the cervix femoris, are, virtually, examples only of an alteration occurring in connection with the disease,—chronic rheumatic arthritis, which presents, in addition, even in an early stage of its progress, certain morbid appearances, which will, I believe, when duly attended to, clearly point to the peculiar character of the affection. There is, nevertheless, a certain condition of the neck of the femur present after the age of fifty, which predisposes, not unfrequently, to great change in it upon the application of violence, and this is particularly well shewn by what ensues when the part is fractured wholly within the capsular ligament; the absorbents, then, become busy agents in the removal of the cervix, and in the course of a few weeks, only, may have accomplished completely their work. This may occur, even, where prior to the fracture, no change in

* Gulliver, op. cit.

the direction of the neck had been present. I examined lately an intra-capsular fracture, which befell a female, aged sixty, two months after the injury, and found the cervix had wholly disappeared, whereas, on the opposite side of the body, this part presented the obliquity natural to an adult bone. This case would, I doubt not, frequently find its parallel, if, after death, both joints are examined, in place of it being taken for granted, that from the age of the patient an almost horizontal direction of the neck existed, as a predisposing cause of the original mischief. Mr. Howship has described a case in which the neck had lost half an inch of its length, by absorption, on the third week after the accident. Illustrations of the fact are in most museums.

Where the head and neck of the femur, however, suffer concussion only, in consequence of a smart blow upon the trochanter major,—where, indeed, these parts are submitted to a momentary compressing force, passing between the trochanter and the opposite point of resistance, the acetabulum,—the same change is liable to take place as that just described, and is one which is very generally taken into account, as being possible, and not improbable, in forming a prognosis of the accident. If the cervix be already inclining to the horizontal direction; if the patient be bed-ridden; if a female be the sufferer, or if a rheumatic diathesis be present, the probability is in each case, I imagine,

increased of the supervention of interstitial absorption upon violence applied to the great trochanter of a person who has passed the age of fifty.

“The numerous pathological inquiries which have been instituted in reference to the condition of the neck of the femur, seem clearly to indicate two facts—1st, that this portion of the bone is less capable of maintaining its vascularity than the other parts of the osseous system; and secondly, that the universal decay of bone natural to advanced age, first commences in it.”* These interesting facts seem to me to bear upon the subject under consideration, thus—if violence be applied in a particular direction, producing, probably, rupture or contusion of some of the nutrient vessels passing along the ligamentum teres for the head and cervix femoris, the quantity of blood supplied to these parts being thereby lessened, becomes still more inadequate to compete in the work of deposition against the opposing absorption which is already assuming the mastery, and the neck of the femur, naturally less capable of maintaining its vascularity than the other parts of the osseous system, falls a prey, (so to speak) in the unequal struggle, and is slowly but surely destroyed; whilst the universal decay of bone coincident with life’s decline, here first committing its ravages, adds a potent influence in determining the issue.

The idea that at the time of the accident some

* B. Curling. op. cit.

vessels of the round ligament, probably, suffer, is strengthened by the post-mortem appearances described by Mr. Gulliver, in the case of M'Gruth; the capsule of the joint appeared uninjured, but the round ligament had apparently been detached from the head of the bone to which it had acquired a new connection near its original site.

The following history I have copied, verbatim, from the case-book of the late Mr. Howship:—

CASE II.—July 23rd, 1828. Mary Hyde, æt 72. In the hard winter, fifteen years ago, she fell with the upper part of the right thigh on the pavement, raised herself by the railings, but fell a second time on the same thigh, which felt benumbed, and for some time she lay lame and helpless. It took her two hours to go on foot from Sackville Street to Bond Street. The leg, she observed, was first turned outwards, and is so still. About a month after the accident, she was able to crawl with a stick, and came into the Oxford ward, St. George's Infirmary, under Mr. Heaviside. For many weeks the hip was fomented, with partial relief. She went out carried in a coach. She was very weak, and the right limb was getting shorter, but she is quite sure that since the accident there has been gradual shortening, and especially within the last twelve months. In walking, it appeared to me that the limb was shortened full two inches, and this accorded with her own idea. There is pain in the articulation of the

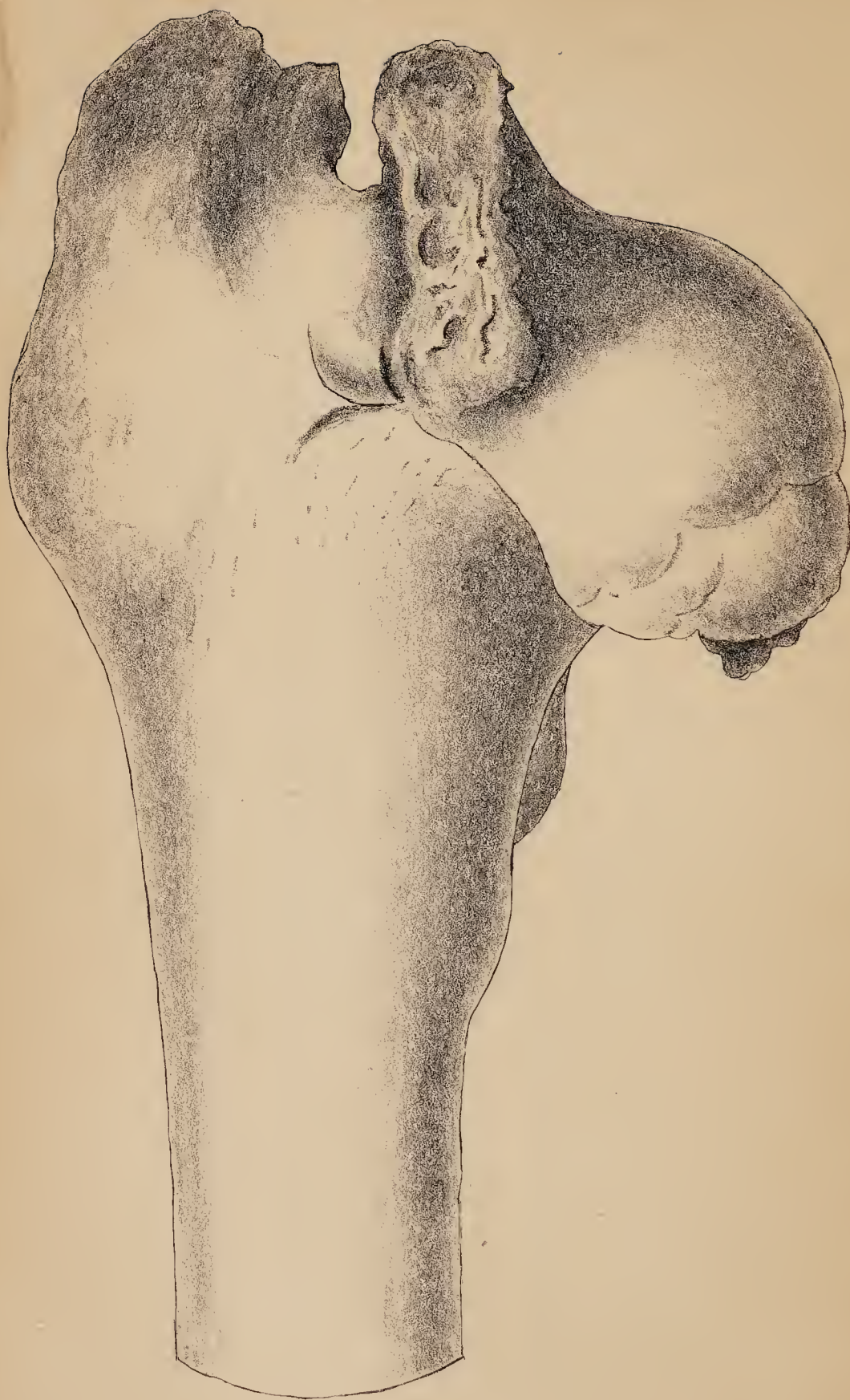
hip-bone in standing on it, as if she had been struck a blow : aching and throbbing when fatigued, but always feels it : if she walks across the room it is slightly benumbed, or as if there was no strength in the bone. If exposed to fatigue, all the distress is in the neck of the femur.

On examination, by measuring with a tape from the bottom of the heel to the anterior superior spine of the ilium, the right thigh is shorter than the left very nearly two inches; the trochanter seems enlarged, but is much higher up than on the opposite side ; but the motions of the head of the bone prove this part in its place : but the neck appears exceedingly shortened, and I think its direction changed.

June, 1831.—Examined her again : able to walk very comfortably ; no pain in bearing her weight, only an inconvenience from shortening.

January 30, 1832.—After an insensible decline, sunk and died.

On removal of the right hip I found the neck of the bone so shortened that the margin of the head (directly behind which the capsule was attached all round) was brought nearly into contact with the two trochanters. A narrow, very small chord (the remains of the ligamentum teres), of its proper substance and appearance, yet existed ; and in the space usually filled at the bottom of the acetabulum by synovial glands, I found two very red and vascular masses of bone, par-





tially covered with cartilage, apparently, an ossification of the fatty substance.

I shall venture to describe, somewhat more in detail the bony parts of the hip, which are preserved in the Museum attached to the Charing-Cross Hospital. (Pl. 5, 6.) Less than half an inch of the neck of the femur remains below, whilst the upper part has suffered still more in the destruction, and is encroached upon, and overhung by, a buttress of bone springing from the anterior inter-trochanteric line, and gradually becoming thinner as it sweeps around, and marks the limit of the head at its upper, posterior, and lateral margins. This projection is on a level with the summit of, and separated from, the trochanter major, by a distance of a quarter of an inch only. The head itself is depressed, spread out so as to be $2\frac{1}{2}$ inches in breadth, and in height 3 inches, preserving still a certain degree of convexity, and overhangs, to concealment, the neck of the bone; so that the resemblance of the two to a mushroom, with a thick and stunted stem, is far from fanciful. The encrusting cartilage is absent in certain places, leaving porous bone exposed. The whole bone, like the corresponding os innominatum, is light and spongy, but firm withal. The acetabulum is widened, and corresponds in breadth and height with the measurements given. The cartilage is wanting in places opposite to the deficiencies on the head of the femur. The width of the notch is $1\frac{3}{8}$ inch.

I have already shewn that the changes occurring in the neck of the femur, incidental to advanced age, are not to be confounded with the alterations which ensue from violence or disease; and the statements of authors I find, not unfrequently, are such as to warrant the idea that there is little if any difference in these affections;—*e. g.* Prof. Miller says: “In consequence of external violence, as a smart blow or fall on the trochanter major, it is not uncommon to find the neck of the femur undergo much change by interstitial absorption; and *similar alteration* may occur spontaneously—that is, without any assignable cause,—seeming to be *one of the signs of the frame’s decay, not only in mass, but in its details, which usually accompany old age.*”*

Analogous alterations from disease.—It is interesting to remark how similar are the morbid alterations in the hip, consequent upon this injury, to those seen in cases of chronic rheumatic arthritis: the same absorption of the neck, giving rise, in part, to shortening of the limb; removal of cartilage; eburnation, of the exposed surface where pressure is greatest; flattening, expansion, and depression of the head, with an irregular projecting osseous girdle, generally, where it joins the cervix; enlargement of the acetabulum, disappearance of the ligamentum teres, with thickening of the capsule, and irregular deposits of new bone around, are to be noticed; loose cartilages also may be

* Principles of Surgery.

found in the joint, and the transverse ligament be converted into a bridge of bone, &c. Such changes, I believe, have not unfrequently been regarded (in the absence of a history of the case) as aggravated examples, merely, of that atrophy of the part natural to declining years. In the examinations I have myself made of the hip in a large number of subjects (male and female), who had lived upwards of sixty, seventy, or eighty years, I have never been able to find any other alteration than a descent of the cervix, and that to a less degree than I imagined would be found at this period of life, from the description usually given by authors of the *horizontal* position of the neck of the femur, which they consider as characterising the bone in an elderly person.

I should mention, in addition, that a thinness of the cortex of this part, and a more open condition of the cancelli, was usually to be noticed. In three female subjects, each more than ninety years of age the cervix I found was but little altered from its natural obliquity. I have occasionally, however, met with a hip-joint (and in general both sides had suffered) where the morbid changes previously alluded to were present; whilst the existence, ordinarily, of analogous alterations in some other articulations would more definitely indicate—though such corroboration is needless—the real nature of the affection.

Mr. Adams, in his account of the rheumatic disease

of the hip, has, in the subjoined remark, hinted at the similarity of the morbid appearances found after this accident to those consequent upon the above complaint. He says, "We have also reason to think that falls upon the great trochanter have given rise to the first symptoms of this disease." In alluding to these observations, Dr. Todd* observes, "This is by no means improbable, nor is the fact opposed to that view of the disease which assigns it a *rheumatic* origin; for, doubtless the perversion of nutrition excited by the violence of the fall, would, as often happens in gout, occasion a greater attraction of the rheumatic matter to the injured joint than would otherwise have taken place." I have already quoted from Mr. B. Bell's work, a passage, part of which bears upon the present question—"In the cases which occur in middle age, it (interstitial absorption of the neck of the thigh-bone) does not in general appear to be an idiopathic affection, but is the direct *result of cold, or a fall, blow, or injury of the trochanter major.*" The latest authority on this subject, Mr. Smith, of Dublin, remarks, "The limb becomes shortened, the foot everted, and not unfrequently we will find in such cases all the symptoms of *chronic rheumatic arthritis* established."†

Not only are the appearances found after death analogous to those seen when the hip is affected with the rheumatic disease, but the symptoms during life are the

* Op. cit † A Treatise on Fractures in the Vicinity of Joints.

same. In both there is stiffness ; limitation of motion in certain directions ; dull, wearying pain in the joint, and extending down the thigh ; aggravated at night and after exercise ; increased in damp and frosty weather, and augmented by inclining the limb in particular ways. There is shortening of the latter ; some wasting of the muscles around the hip ; inability to support the weight of the body long on the affected side without inducing dull pain in the articulation ; absence of redness, and undue heat of the part, &c.

A P P E N D I X .

SINCE the publication of the foregoing account, I have met with another instance of this affection of the hip arising from injury, detailed in the case-book of Mr. Howship. It is one, which (like that last described), has not, hitherto, appeared in print, and presents certain peculiarities, some of which are illustrative of the preceding observations, whilst others tend to throw additional light on this interesting subject.

CASE III.—August 22rd, 1831.—Joyce Powell, aged 70 years, last June twelvemonth, was first seized with flooding, which afterwards returned with fury and frequency, accompanied by urgent bearing down and

straining. Her right hip (her daughter told me) had been put out when she was a girl, thirteen years of age. It had never been properly set. It was so bad the next morning that she could not walk, and so swollen that they could not set it. The hip never hurts her except on change of weather—in windy weather most, when it aches, and she can tell when a change is coming. The daughter often heard her relate the story:—she was running about the house and slipt down and put her hip out. She went to bed, and the next day there was so much swelling that the medical persons told her the hip could not then be reduced, but, to the best of her belief, it never was properly reduced.

She died in the House of carcinomatous disease of the womb.

The next day I examined the body, and finding that although the knee of the right side was perfectly straight and equally forward, the right heel was at least two inches higher than the left, partly compensated for by the foot being turned downwards, as she generally walked on her toes very much. Foot neither inverted nor everted. On examining the hip I found the trochanter was placed upward and forward and less outward on that than the opposite side. I could also quite distinctly see and most distinctly feel the head of the femur partly projecting forwards, towards the pubes, so, that in detaching the tendon of the

psoas magnus and iliacus internus which passed round the capsule inclosing the head, I thought, at first, I had opened the capsular ligament. There was a considerable extent and thickness of bone deposited in front and round the sides to form a new acetabulum. The capsular ligament, as it now presented itself, did not seem materially thicker than natural.

August 24th.—Divided round the capsular ligament, which I found much thickened and very strong, although very willing to admit a sufficient extent of motion, with safety to the joint. The cavity of the acetabulum was very deep, but no trace of the round ligament or depression for its insertion. On the head of the femur there is no remaining trace of the impression for the attachment of this ligament. The neck of the femur is very short, but still existing.

November 23rd.—Bones now clean. The dislocation appears to have been upwards upon the ilium; the head of the bone having rested above the cartilaginous margin (at that age) of the joint. Judging from the quantity and position of the deposited new bone which formed a complete new cavity between the pubes and ischium, it appears to have been a secondary consequence of ossific secretion taking place into the substance of the fibrous structures, which, Ambrose Paré says he found to occupy the cavity of the joint in unreduced luxations.

In the Museum attached to the Charing Cross Hos-

pital, the ilium and upper third of the femur, removed from this patient, are preserved. A superficial examination even of them disproves completely the statement that the hip is the subject of any ordinary unreduced dislocation; the appearances, however, are such as we commonly see presented by chronic rheumatic arthritis—but there are certain peculiarities, withal, which would seem to show that the joint had been the seat, originally, of a peculiar form of injury—but before proceeding with these remarks, it will be necessary to describe more in detail, the condition of the parts forming the articulation.

The acetabulum (Pl. 8.) is increased in size and measures $2\frac{1}{2}$ inches in the vertical and 2 inches in the transverse direction. The upper half of this cavity is much broader than the lower, beyond the level of which it projects considerably. The former part, at its margin, is thin, spiculated and irregular, presenting small grooves and pits above, but is even and polished below. Nearly the whole of the upper half of the socket is coated within by a stratum of ivory-like deposit, having numerous apertures, which leave the subjacent bone exposed. Within the lower half, new bone has been laid down, having a slightly uneven free surface; it is a quarter of an inch thick where it forms the edge of the cavity, but becomes thinner by degrees as it recedes from this part. A portion of it is continued across the notch of the acetabulum; the notch being more







than an inch in length. The broad deposit of bone is so placed as to fill up the depression for the ligamentum teres, and, effectually, prevent the ingress of vessels to the head of the femur. In consequence of the increased capacity of the acetabulum its inner edge has advanced below to the ilio-pectineal eminence, whilst, above, it has encroached upon the inferior spinous process and dorsum ilii.

The head of the femur (Pl. 7.) corresponds, in its admeasurements, to those given of the acetabulum, and is incrusted with porcelanous material to the same extent and in the same situation as the latter. A layer of new bone, deposited on the lower and posterior part, overhangs the neck and projects backwards to the distance of half an inch: the inclination of it is, likewise, outwards, so as to leave an interval, behind, between the trochanters and its margin of a quarter of an inch only. The cervix has not suffered so much as this part had done in the last case, the obliquity of the portion remaining is natural, and the general appearance of the head and neck is such as might warrant the likeness to "a mushroom with a thick and stunted stem."

From the above account, it is evident that the hip is not the site of an unreduced dislocation—at all events, of a complete dislocation, but I think it not improbable that the injury inflicted might have loosened from its attachment the upper part of the cartilaginous margin of the acetabulum, so as to allow of the

